

# **U.S. EPA TECHNICAL SUPPORT PROJECT BUSINESS SESSION MINUTES**

**June 7- 8, 1999  
St. Louis, MO**



## **U.S. EPA TECHNICAL SUPPORT PROJECT CO-CHAIRS**

### **Engineering Forum:**

**JoAnn Cola, Region 9 • Camille Hueni, Region 6 • Steve Kinser, Region 7**

### **Ground-Water Forum:**

**Curt Black, Region 10 • Luanne Vanderpool, Region 5**

### **Federal Facilities Forum:**

**Meghan Cassidy, Region 1 • Steve Hirsh, Region 3 • Paul Leonard, Region 3**

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## BACKGROUND

The Spring Technical Support Project (TSP) semiannual meeting was held in St. Louis, Missouri, from June 7-11, 1999. The Federal Facilities Forum planned the meeting in conjunction with the EPA conference on *Subsurface Remediation: Improving Long-Term Monitoring & Remedial Systems Performance*. The three TSP forums (Federal Facilities, Engineering, and Ground Water) held their business sessions on June 7 and 8. The conference, which started on the evening of June 8 and ended on June 11, served as the forums' technical sessions. This document summarizes the discussions and presentations held during the business sessions only.

## FEDERAL FACILITIES FORUM

### ***Regional Round-Up***

Federal Facilities Forum Co-chair, Paul Leonard (Region 3), welcomed the group to its semi-annual meeting. To open discussion, Forum members identified the issues of most concern in their regions:

#### Region 1 (reported by Meghan Cassidy):

- partial deletions
- site background information
- future funding for monitored natural attenuation (MNA)

#### Region 2 (reported by Carla Struble):

- unexploded ordnance (UXO)

#### Region 3 (reported by Steve Hirsh):

- horizontal splits at both BRAC (Base Realignment and Closure) and non-BRAC sites
- perchlorate clean-up goals and risk evaluation
- site listings
- UXO at both NPL and non-NPL sites
- Formerly Used Defense Sites (FUDS)

#### Region 4 (not reported)

#### Region 5 (reported by Craig Thomas):

- site listings
- UXO
- MNA
- institutional controls

#### Region 6 (reported by Chris Villarreal):

- perchlorate contamination at (both NPL and non-NPL) sites with sole-source drinking water

#### Region 7 (reported by Scott Marquess):

- FUDS
- Army Independent Technical Review
- the Army's plans to use MNA for explosives in ground water

#### Region 8 (not reported)

#### Region 9 (reported by Glenn Kistner):

- identification of a new branch chief in Region 9
- future of BRAC Program funding
- UXO at Ford Ord Military Reservation, California
- treatment systems forming dioxin
- Y2K notification

#### Region 10 (reported by Harry Craig):

- UXO dispute resolution at Adak Naval Air Facility, Alaska, and Umatilla Chemical Depot, Oregon
- institutional controls (such as behavior modification) at BRAC sites
- BRAC resources

- Technical Impracticability (TI) waivers and use of MNA
- construction completions on state-lead sites

Leonard noted that the Agency will begin offering a new training course this Fall on post-ROD issues at federal facilities. Forum members interested in serving as instructors should contact John Quander (TIO) at (703)603-7198. Quander is seeking four or five Forum members to help teach the course. The Forum also agreed to discuss the development of new issue papers. Craig informed members that the most recent issue paper, *Field Sampling and Selecting Site Analytical Methods for Explosives in Water*, has been formally distributed and is available on the Web at <http://www.clu-in.org>. Lastly, Leonard requested that Forum members gather information on issues of concern from other regional staff in advance of each semi-annual TSP meeting and monthly Forum teleconferences, and be prepared to present the information during the “regional round-ups” typically conducted during these discussions.

### ***FFRRO Publications***

Renee Wynn (FFRRO) reported that *Partners in Progress* and other literature developed by the Federal Facilities Restoration and Reuse Office (FFRRO) are available on the Internet at <http://www.epa.gov/swerffrr/>. Questions concerning FFRRO’s publications or communications may be directed to Dianna Young (FFRRO) at (202)260-5033.

### ***CERCLIS 3***

Wynn indicated that CERCLIS 3 contains information on the 162 federal facilities currently listed on the NPL. To avoid repeated requests from FFRRO for site-specific information, she requested that the regions routinely load data into CERCLIS, which tracks both past and future site activities. She explained that FFRRO uses CERCLIS 3 to predict workloads and budgets for “two years out” (the current year plus two years). By August 1, 1999, FFRRO will complete the budget for 1999-2001. FFRRO also uses CERCLIS 3 to provide the public with the most accurate information possible, in accordance with requirements of the Government Performance and Results Act (GPRA)..

Hirsh added that Headquarters tools do not exist for tracking activities or workloads on sites not included in CERCLIS 3. Marquess commented that CERCLIS 3 is of limited use to RPMs and instead presents them with the additional burden of data input.

### ***Future of Federal Facilities Work/BRAC***

Wynn stated that 90% of the decisions made at NPL sites do not apply to federal facilities. Approximately 50% of FFRRO’s work involves reworking data on UXO, FUDS, BRAC, ROD status, optimization, and other work areas for which information is not captured in CERCLIS 3. FFRRO will present the status of federal facility activities to the FFLC in June 1999 and to Agency division directors in July 1999. In contrast to non-federal facility sites, clean-up activities at federal facilities are not tapering down from past levels.

Marquess requested clarification on how to determine which federal agency is responsible for conducting a five-year review. Wynn indicated that mixed opinions exist on interpreting statutory authority concerning lead agencies for five-year reviews. She will investigate the most current position taken by the Agency on this issue, and report back to the Forum.

### ***Superfund Reauthorization***

On June 10, 1999, the Administrator will testify to Congress on HR 1300—a non-comprehensive, short, Superfund reauthorization bill. One section of the bill potentially impacts federal facilities with respect to state roles, remedy selection, ground water, risk assessment, and clarification of the term “current owner.” S 1090, also a non-comprehensive reauthorization bill, will be submitted for Senate mark-up on June 19, 1999.

Wynn reported that Superfund reauthorization bills may include provisions changing the current waiver of sovereign immunity. Although FFRRO opposes any change to the waiver, such provisions could be included in final Superfund reauthorization. Superfund Program funds are expected to be fully used by late fiscal year 2001. The Agency is taking the position that refunding of the program should take place through reinstatement of the existing tax structure rather than general revenues.

### ***NPL Listing Policy***

Although few federal facilities have been added to the NPL over the past eight years, facilities must be aware that sites can be added in the same manner that privately-owned sites are added. Wynn stated that regulators are encouraged to list federal facility sites using the steps outlined by the Office of Management and Budget (OMB). These steps emphasize the importance of extensive interagency negotiations between EPA and other involved agencies, and the need for EPA preparedness when entering into negotiation. Certain DoD sites have been listed in the past, in part, because EPA representatives entered negotiations with site-specific information while DoD brought none. In addition, regions are encouraged to bring the most appropriate persons to the table when negotiating NPL listings.

It was recognized by the Forum that, on occasion, federal facility agreements are developed in lieu of an NPL listing. Craig noted that DoD’s anticipated funding reduction for BRAC sites may impact future NPL negotiations. For state-lead sites, OSWER has committed to reaching concurrence with a state prior to listing the site. If a state does not respond to the EPA’s efforts to reach concurrence, the Agency informs the state in writing that listing will proceed if the state does not respond within a certain number of days. Additional questions concerning NPL listings may be forwarded to Dianna Young (FFRRO).

### ***Lead-Based Paint Update***

Wynn summarized six areas of debate between EPA and DoD concerning contamination resulting from lead-based paint. (1) Attempts are underway to document or codify an agreement reached between Tim Fields (OSWER) and Sherry Goodman (DoD) on August 14, 1998. (2) The two agencies have agreed on language to be included in documentation regarding the suitability of property for residential use. Deed restrictions, including tools such as simple notification, are required if EPA is unconvinced that problems do not exist. (3) The two agencies are developing a joint interim field guide for residential properties. (4) EPA will conduct pilots to study and compare the process(es) for managing private versus federal facility sites with lead-based paint. (5) EPA plans to develop a policy for the transfer of properties with lead-based paint. (6) Hazard levels and screening levels will be identified in accordance with TSCA Section 403 rules. The distinction of “child-occupied property,” which is not addressed in the interim field guide, continues to be unclear. DoD has chosen to limit clean-up goals for such property to those “consistent with residential property.” Additional questions concerning lead-based paint may be forwarded to Monica McEaddy (FFRRO) at (202)260-2035.

***Other FFRRO Topics and Summary***

Wynn reemphasized that a primary goal on the way to federal facility site clean-up is the accomplishment of construction completion status. EPA's budget for fiscal year 2000 is likely to be reduced from current levels, possibly by as much as 12%, to accommodate increased funding targeted for the U.S. Veterans Administration and the Department of Housing and Urban Development. To address current budget concerns, EPA has implemented a hiring freeze that is effective June 2 to July 2, 1999.

DoD plans to fund the Agency for 100 FTEs at BRAC sites, which is a reduction of 35 FTEs from the current level. It was noted that DoD prefers to fund NPL, rather than non-NPL, sites. While Tim Fields (OSWER Assistant Administrator) and Carol Browner (EPA Administrator) have committed to protect the Agency's base closure work force, FFRRO will consider how to adjust its program to DoD's funding reduction. Additionally, the Agency must be innovative and creative to address the potential impacts of reduced funding for the Superfund Program.

OSWER management has undertaken efforts to renew the Agency's dialogue with DoD concerning an interim policy for institutional controls. Although the U.S. Navy has implemented policy similar to the Agency's current draft policy, and the U. S. Army may do likewise, DoD is not in full agreement with the pending draft. Cassidy pointed out that the additional loss of EPA resources will result in increased difficulty in effectively implementing institutional controls.

Wynn closed the discussion of FFRRO activities, noting that a short list of FFRRO lead contacts currently is posted on the Internet and a more comprehensive list will be added shortly. Questions concerning issues not referenced on the Internet may be forwarded directly to Wynn at (202)260-8366 or E-mail at [wynn.renee@epa.gov](mailto:wynn.renee@epa.gov).

***Identification of State Issues***

In response to OSWER's request for full and meaningful state participation in TSP activities, three state representatives have joined the Federal Facilities Forum. Rich Steimle (TIO) indicated that these representatives should be fully integrated into the Forum, with the intention that they will distribute pertinent information within the states. The Forum has relied upon technical expertise provided by the states in the past, and recognizes that states have participated in other interagency groups that may complement the Forum's goals and activities. The Forum co-chairs plan to discuss with state representatives their mutual expectations for Forum participation.

***Army Independent Technical Review***

The Army Environmental Center (AEC) has determined that Army Independent Technical Reviews (ITRs) should be conducted at non-BRAC sites involving \$6 million for site cleanup or at BRAC sites involving more than \$0.5 million. ITRs have been completed at approximately 12 sites—half of which are BRAC sites. According to the U.S. Army, ITRs are intended to assist in making pending decisions.

Typically, the ITR process begins with completing a survey forwarded by AEC to the EPA region and is followed by a site visit. After the visit, the AEC provides EPA with a summary of recommendations, which they negotiate.

Marquess noted that an ITR was conducted recently at the Iowa Army Ammunition Plant. He reported that the survey required 400 hours of staff time to complete, in contrast to the 40 hours estimated by the AEC. Approximately 30 people, including technical and legal representatives from AEC, AEC contractors, the State of Iowa, and EPA participated in the site visit, which lasted one week. Approximately 6-8 weeks after the site visit, the AEC provided Region 7 with a 40-page summary of recommendations concerning

planned clean-up activities. Region 7, the State, and the installation did not agree with many of the recommendations, but worked together effectively to negotiate final recommendations with AEC.

According to Marquess, Region 7's experience with the ITR process was unfavorable. Rather than examining only pending decisions, as originally stated, the AEC reviewed nearly all clean-up activities. Marquess recognized the potential value of the ITR in the overall RI/FS process (similar to the Agency's remedy review board), but recommended that a clear role for the ITR process be defined for RI/FS through post-ROD phases of clean-up.

Cassidy pointed out that an ITR was conducted at a Region 1 site, and Army funding for continued cleanup at the site was not released until the technical review panel was satisfied. Douglas Bell (FFRRO) indicated that FFRRO management has made it clear to the AEC that funding cannot be held in this way without the involvement of OSWER management. Forum members were requested to inform Bell if funding losses are experienced in their regions as a result of ITRs, and emphasized that attempts should be made to partner with AEC in resolving issues without the use of funding leverage.

The Forum agreed that formal correspondence from FFRRO to AEC within the next 90 days is appropriate to clarify: (1) advantages and disadvantages posed by the ITR process; (2) EPA's participation in the review panel; (3) specific phases of site clean-up during which an ITR is applicable; and (4) project funding issues. Marquess and Bell will draft the correspondence and circulate it to the Forum for comment.

### ***FUDS/FUDS Enforcement***

Marquess stated that the U. S. Army Corps of Engineers has executed programs at FUDS in an arbitrary manner, seemingly selecting some CERCLA provisions to follow and others to ignore. He added that the Corps has implemented numerous decisions without EPA approval, and frequently has completed work plans after work already has been completed. Contributing to the difficulty in managing cleanup at these sites is the fact that FUDS have not been defined clearly as either private or federal facility sites. Two overall problems concerning FUDS were recognized. First, a comprehensive and accurate list of the universe of FUDS or their status does not exist. Second, enforcement vehicles (including Federal Facility Agreements, NPL listings, and DOJ orders) are not delineated clearly.

To address these problems, an Agency workgroup has drafted a list of recommendations and will meet with FFRRO representatives on June 16, 1999. The list includes recommendations such as completing site assessment at each of the 5,000-8,000 FUDS estimated to exist, and facilitating state involvement at FUDS. Following these internal discussions, EPA intends to meet with the Corps in an effort to resolve the issues. Participants agreed that, although FUDS are not problematic in all EPA regions, a national FUDS-related policy is needed for effective project management and would benefit several federal agencies.

### ***ROD Review Summary***

Cassidy provided a summary of the Records of Decision (RODs) reviewed in December 1999. The ROD Review Team, which was led by OERR, consisted of 44 Headquarters and regional representatives. A total of 103 final/interim and 28 no action/no further action RODs were reviewed. In addition, 19 ROD amendments and 38 ESDs were reviewed by the Review Team. Key findings from the review included:

- 77% of the RODs addressed ground water.
- Only 60% of the RODs reported baseline risks for at least some of the contaminants of concern.
- Only 3-5 RODs, all of which were federal facilities, addressed ecological problems exclusively.
- Federal facility sites reported lower total baseline cancer risks than non-federal facilities.
- 14 RODs involved presumptive remedies.

- MNA was part of the remedy at 32 ground-water, 6 soil, and 5 sediment sites. At only half of these sites, however, was information presented indicating that natural attenuation was expected to achieve remedial objectives.
- Of the ground-water remedies, 31% included a form of treatment (37% for non-federal facilities and 24% for federal facilities). The most frequent alternatives selected were institutional controls and MNA (14%) and source control/monitoring (13%).

It was noted that a checklist to help prepare RODs is available from Headquarters. Forum members and RPMs may wish to provide a copy of the checklist to federal facilities to help them. Generally, federal facility RODs scored lower than in the previous year. The ROD Review Team's findings for each region may be obtained from regional representatives. Each region is expected to hold a meeting to discuss the findings.

Cassidy highlighted key findings for Region 1, which included:

- Institutional controls may not be implemented as much as needed.
- Land use is a concern.
- Only 50% of the RODs were prepared adequately.

As a result of the findings, Region 1 may revise its model ROD. Cassidy explained that use of the model ROD in Region 1 has streamlined ROD development significantly, and has reduced the time required for legal review because the model contains certain language that cannot be altered. She will forward a copy of Region 1's model ROD to members of the Forum for their potential use.

### ***Range Rule Update***

Bell reported that AEC has anticipated promulgation of the range rule since December 1996. At this time, however, promulgation of the range rule is not anticipated to occur for at least another year. EPA continues to disagree with certain sections of the rule, which was deferred for resolution by OMB in August 1997. OMB review of the rule may resume in late 1999.

A primary issue of concern to EPA is the rule's risk methodology, known as the range rule 3 method (R3M). In order for EPA to agree with R3M, decision-makers need a risk management tool to evaluate factors such as remedy selection and land use. Additionally, the presence of ordnance mixed with hazardous substances at many sites creates a particularly complex problem. Sherry Goodman (DoD) has requested EPA's cooperation in resolving the issues of concern, and has agreed to promulgate the rule only after full agreement is reached with EPA, the states, tribes, and other potentially involved agencies. If the proposed range rule is not finalized, range issues are likely to be added to EPA's Military Munitions Rule as early as June 2000.

Historically, DoD and regulators have viewed the range rule issues differently, while UXO problems have continued to expand and occur at an increased number of sites (including FUDS). Regardless of these differences, a systematic and effective risk reduction approach is needed now at many ranges. Due to the extensive resources required to implement a quantitative approach, EPA believes that a qualitative approach to risk management is appropriate. Along with the risk methodology, FFRRO anticipates further discussions with DoD concerning range characterization, stakeholder participation, and the use of statistical models. Questions concerning the range rule may be forwarded to Bell at (202)260-8716.

## **UXO Issues**

Craig reported that the UXO Subgroup continues to address UXO issues such as the identification of site characterization technologies, quality assurance procedures, and determination of “how clean is clean?” The Subgroup also shares examples of effective, as well as ineffective, management of these problems on a site-specific basis. Of overall concern is the determination yet to be made regarding whether UXO constitutes a CERCLA hazardous substance. Persons wishing to participate in the UXO Subgroup’s monthly teleconferences may contact Craig at (503)326-3399.

## **Explosives Soil Sampling Design for Active Firing Ranges**

Thomas Jenkins, Ph.D. (Cold Regions Research and Engineering Laboratory) presented information on methods developed by CRREL for sampling and analysis of explosives contamination at active firing ranges. Studies were conducted at CRF-Valcartier in Canada and at Fort Ord in California, to compare the spatial heterogeneity of HMX and TNT residues using both onsite and laboratory-based analytical methods, and to estimate the levels of residue accumulation.

CRREL’s method involves establishing an interlocked series of seven sampling locations within a wheel-shaped pattern. Test results of colorimetric onsite methods were compared to the results of laboratory analysis (EPA Method 8330 and acetone high pressure liquid chromatography [HPLC] analysis) on duplicate samples. High correlations (+0.9) between the colorimetric and laboratory analyses were found consistently at both the CRF-Valcartier and Fort Ord sites. Comparison of sample depths confirmed that HMX contamination sources were best identified with the use of near-surface soil samples.

A major conclusion of the study is that a homogenous and representative composite from a set of discrete samples is feasible and does not require sophisticated equipment or exceptional effort or time when 20-gram subsamples are used for analysis. Results demonstrated that sampling error generally contributes at least 10 times more uncertainty in results for explosives-site characterization than does analytical error. The studies also showed that the standard method of grid sampling using discrete samples is ineffective for characterizing explosive contamination.

Improvements in the quality of environmental analyses need to focus on ways to reduce sampling error, rather than improving laboratory performance. CRREL recommends, therefore, the use of onsite sample homogenization, compositing, and analysis, with appropriate confirmation of results at an offsite laboratory to address larger problems. Dr. Jenkins may be reached at (603)646-4385 with any questions concerning these studies.

## **Pump-and-Treat Optimization Study**

Kathy Yager (TIO) reported that the Technology Innovation Office (TIO) has completed its pump-and-treat optimization study and will summarize the results during the *Subsurface Remediation: Improving Long-Term Monitoring & Remedial Systems Performance* conference later in the week. TIO also is sponsoring regional training sessions to describe EPA’s and DoD’s tools for system optimization. The first training session will be held in Chicago in September 1999. Additional information about this session may be obtained from Dave Wilson (Region 5) at (312)886-1476.

Yager also reported that Air Force Center for Environmental Excellence (AFCEE) has prepared a draft remediation optimization handbook entitled *Regulatory and Technical Guidance Framework for Evaluating Systems*. AFCEE requested that interested Forum members review the document informally and submit comments by July 16, 1999. The Forum expressed concern that informal review may be interpreted as EPA endorsement of the final document, and declined to review the document until EPA’s

review role is clarified. Yager and Bell will consult with FFRRO management to determine the appropriateness of EPA review of the draft handbook and response to AFCEE.

### ***Federal Facilities Forum Website***

The Forum co-chairs reported that Region 3 has implemented improvements to the Forum's website (<http://clu-in.org/tsp/tsp.htm>). Members suggested general topics of interest that may be addressed in potential additions to the site, including: (1) the agenda for upcoming TSP meetings; (2) links to sites pertinent to the Forum's interests; and (3) accessibility to technical guidance, policy, and other useful documentation. Specific and general suggestions for improving the website should be forwarded by July 15, 1999, to the co-chairs, who will create a list of potential improvements and screen the suggested site links. It was noted that links to sites sponsored by groups such as NARPM, ATSWMO, ITRC, RTDF, DOE/ITRD, and the states may be useful.

Leonard will contact Mike Cullen (OSWER) and Ron Wilhelm (OAR) to help determine the accessibility of documentation and pertinent information currently available on various EPA websites. The Forum will continue its discussion of the website during its July 1999 teleconference.

### ***Fall '99 Meeting***

The next TSP meeting will be held in Las Vegas in conjunction with DOE's Eleventh Technology Information Exchange (TIE) Workshop, which will be held on October 26-27, 1999. Forum business session topics are anticipated to include perchlorate, FFRRO updates, ITRD updates, FUDS, contaminated sediments, UXO, and selected information presented by the National Exposure Research Laboratory. Potential locations for subsequent meetings are Monterrey, California, in the Spring of 2000 and New Orleans in the Fall of 2000. The Fall 2000 meeting will be organized by the Federal Facilities Forum.

### ***Future Forum Activities***

The co-chairs expressed concern with the low rates of participation in the past several teleconferences and other Forum activities such as Agency work groups, interagency activities, and training development. The Forum members agreed that participation in the Forum should include basic responsibilities:

- A regional or office representative should participate in each monthly teleconference. It was suggested that each region designate one primary representative and one back-up representative for this purpose, and ensure that the back-up participates if the primary person is unavailable. If a region is entirely unable to participate, the co-chairs should be notified in advance. It was recognized, however, that designation of a single, consistently active representative may work best in some regions.
- Teleconference participation should be active. Attempts to contribute even minimal information are needed.
- Teleconference agendas should be developed on an active basis by the full Forum. Discussions will be more meaningful if members clarify in advance the topics that would be of value in their region or office.
- Active participation in TSP meetings and other Forum activities is needed. Currently, the co-chairs hold responsibility for fulfilling most of the requests for assistance expressed by other intra- and interagency groups, including TIO, FFRRO, FEO, and the FFLC. Each member should become involved in at least one non-routine role, such as work group participation or issue paper development, each year.

It was suggested that additional regional support may be gained if management at FFRRO reaffirmed the importance of the Forum to regional management.

Leonard reported that he will attend the 1999 FFLC meeting in San Francisco. During the meeting, he will provide an update of the Forum's activities and describe the technical and policy issues of concern to the Forum.

### ***Proposed UXO Handbook***

Bell requested input from the Forum on the content of a UXO handbook that FFRRO is considering developing. The handbook is intended for use primarily by EPA RPMs, but likely will be used much more widely. At this time, a 1993 ORD document on explosives and radioactive waste is the only EPA document available for guidance on UXO management. The Forum agreed that additional guidance on UXO methods, site characterization, characteristics of explosives, chemical agents and chemical agent test kits, case studies, safety precautions, background and role of the DDESB, and a listing of UXO expert contacts within EPA would be valuable.

### ***Meeting Debrief***

Leonard asked for feedback on the St. Louis business sessions. Positive aspects expressed by the group included:

- a more effective format offered by the compressed schedule
- more productive discussions generated by holding Forum business sessions at the beginning of the TSP meeting
- an opportunity to hear FFRRO's perspective on a variety of issues of interest to the Forum
- regional round-up
- reduced Forum workload required to organize the meeting in conjunction with the *Subsurface Remediation: Improving Long-Term Monitoring & Remedial Systems Performance* conference

Negative aspects expressed included:

- a lack of sufficient state representation
- cancellation of the UXO break-out session
- the Forum's reduced control in the meeting agenda
- insufficient depth of discussion on certain topics
- lack of follow-up to regional round-up
- convening of the meeting on a Monday, which made it difficult for some participants to attend the initial business sessions

The co-chairs will prioritize the regional round-up issues and ensure that follow-up to the "hot topics" takes place. A short list of these issues will be developed and distributed prior to the next TSP meeting. During the July 1999 teleconference, the Forum will discuss further some of the specific issues identified during the meeting.

## ENGINEERING FORUM

### *Engineering Forum Participation and Future Direction*

Engineering Forum Co-chair JoAnn Cola (Region 9) voiced concern that participation in the Forum was declining. Frank Vavra (Region 3) stated that, unlike the Ground Water and Federal Facilities Forums, the Engineering Forum lacked support and constituency in Headquarters. Co-chair Camille Hueni (Region 6) added that the Engineering Forum does not currently have an alliance with any one group and that perhaps networking with the DoD or the U.S. Army Corp of Engineers would be beneficial. Vavra made the following suggestions: (1) EPA should meet with the USACE during the Las Vegas TSP meeting; (2) EPA RPMs should ask the Corps' Center of Expertise for technical support; (3) EPA should work with the USACE in developing a document review panel; and (4) EPA should include Corps personnel as members of the Engineering Forum. Co-chair, Steve Kinser (Region 7) suggested that in addition to developing contacts within the Corps, the Forum should also work toward identifying engineering issues and producing quality products that address engineering problems. Bob Stamnes (Region 10) agreed to contact Dave Becker, Steve White, and members of the Center of Expertise, to establish a cooperative relationship and invite them to the Fall TSP meeting. The Forum members also agreed to work toward getting constituency in Headquarters, develop the Forum as a resource for the regions, network with existing EPA resources, develop a positive relationship with the Center of Expertise, and bring more engineering issues to the forefront.

### *Forum Membership Guidelines and Internal Organization*

Cola noted that the Engineering Forum did not have specific membership guidelines. She passed around a copy of the Ground Water Forum organizational procedures for Forum members to review. The Forum discussed the guidelines and proposed the following membership criteria:

#### Membership criteria

- Each member must be a permanent employee of the USEPA.
- Each region will have one CERCLA, one RCRA, and one alternate representing them.
- Membership can be extended to include representatives from the states, Headquarters, the laboratories, and the STLPS.
- All members must be either engineers or technical professionals.
- Each member must participate in monthly conference calls and biannual TSP meetings. A member will be dropped if there is no participation in four consecutive meetings, or six of the twelve yearly meetings.
- Each member must join and actively participate in a workgroup that is beneficial to the Forum. (Participation is defined as being involved in at least one Engineering Forum work product in a year. A work product is an item such as: an issue paper, a guidance document review, representing the Forum at meetings, or any other relevant activity.) Members will be required to report on their participation on a biannual basis.
- Members are responsible for finding an alternate member who will carry out their responsibilities.

#### Membership responsibilities

- Members will be required to report on their participation in the TSP on a biannual basis.
- Members will be required to disseminate information on national and technical issues within the individual regions and regionally incorporated States, as applicable.
- Members will develop stances on engineering-related technical issues.

- Members will articulate regional engineering technical issues to the Forum.
- Members will identify inter-regional technical engineering problems. Solutions will be developed within the Forum and directed to the EPA laboratories for further research.
- Members will act as advisors and intermediaries to RPMs for EPA laboratory site-specific technical assistance.
- Members will act as intra- and inter-regional engineering experts.

#### Co-chair responsibilities:

- Co-chairs will preside over monthly conference calls and general meetings.
- Co-chairs will develop the agendas for the meetings mentioned above, after consulting with the Forum at large.
- The co-chairs will ensure regional representation.
- Co-chair will monitor the monthly agenda activities such as work group activities, issue papers, and other agenda items.
- All official correspondence will be generated by the co-chairs.
- Co-chairs will act as central point of contact for both inter- and extra-Forum activities.
- The co-chairs will be the only individuals who can communicate, in writing, the official position statements of the Forum. Official position statements will be developed by the co-chairs following the consensus of the Forum at large. Co-chairs may delegate the authority for issuing a specific position statement to the relevant work group chairs.
- Under no circumstances may an individual Forum member issue a position statement, oral or written, that represents the Forum at large. It is the responsibility of the individual Forum members to ensure that their individual position statements not be construed as representing the Forum as a whole.

#### Co-chair election process:

- Co-chairs will be elected for a 3-year staggered term.
- Each region will have two votes.
- Nominations for the co-chair position will be held prior to the May conference call.
- Members will send their votes to the contractor that is providing support for the TSP, prior to the June conference call meeting. The contractor will tally the results and send them to the Engineering Forum co-chairs.
- Election results will be announced at the June conference call and E-mailed to the Forum members.
- A majority vote will determine the co-chair.
- If a co-chair is no longer able to fulfill their duties prior to the end of their appointment, a special election will be held if the term remaining is greater than three months.

The Forum members agreed to develop an agreement that will be signed by all Forum members. The contents of the agreement will include the Engineering Forum bylaws and a list of the membership criteria. In order to renew interest in the Forum, all members will be asked to read and sign the agreement. Stacie Driscoll (Region 3) will be responsible for developing the agreement by June 25, and Angela Morales (EMS, Inc.) will write up the proposed organizational procedure decided by the Engineering Forum. The Forum members were unsure of the role the state representatives would play in the organizational procedures. The co-chairs will speak with Rich Steimle (TIO) and make a decision by the July conference call concerning whether to include them as Forum members.

#### ***Co-chair Elections***

The Forum members held an election for the co-chair position currently being completed by Cola. Cola was elected to serve a new 3-year term as an Engineering Forum co-chair.

***Construction Equipment Training/Information Project***

Hueni reported on the status of the construction equipment video and handbook currently being formatted by Susan Webster (Region 6). The handbook and video will provide RPMs with a source of information on construction equipment including, production rates, capacity, and other statistics on the machinery. Stephen Nussbaum (Illinois EPA) suggested that the Forum contact the U.S. Army Corps of Engineers for information on construction equipment. Vavra suggested that the Forum work with the Corps to develop the video and handbook. Hueni volunteered to check if Webster is still interested in working on the project. Hueni will also speak with the Corps to see if they have information to provide for the project.

***Web Page Update***

Steimle indicated that reestablishing the EPA link to the TSP website would not be a problem. The link was lost when the CLU-IN site changed its web address from [www.clu-in.com](http://www.clu-in.com) to [www.clu-in.org](http://www.clu-in.org). Mark Granger (Region 2) is contacting the individuals who will make the necessary changes.

***Oxygenates Issue Paper***

Dave Burden (SPRD-Ada) reported that the laboratory is having a problem assigning personnel to format the oxygenates issue paper. Burden explained that a new Dynamac contract is being issued and there may not be enough personnel available to format the paper. Burden hopes to have the issue paper in a draft format by the end of July. Vavra recommended that the Forum ask Burden for the Dynamac issue paper workplan in order to insure that the original Engineering Forum scope was being followed.

***Impact of Redevelopment /Reuse Initiative on Superfund/RCRA Activities***

Cola asked if there was role for the Forum in the redevelopment/reuse initiative on Superfund/RCRA activities. The Forum concluded that the areas where the Forum could be useful as a resource was in landfill design. The Forum could be a resource in: (1) determining compatible uses of landfills; (2) compiling a checklist for future use (i.e., recreational or commercial) of landfills; (3) designing landfill structures; and (4) landfill retrofitting considerations,

Nussbaum offered to compile an inventory of landfills for the Forum. Kinser suggested that the inventory can be used to determine: (1) what has been done at landfill sites; (2) the engineering technologies that have worked at sites; and (3) a landfill remediation profile. Kinser and Stamnes will form a new Forum workgroup called "Engineering and Technology Considerations for Landfill Redevelopment and Reuse."

***Fall '99 Meeting***

The Engineering Forum will be the lead organizer for the Fall TSP meeting. The Forum will combine the Fall TSP meeting with DOE's Eleventh Technology Information Exchange (TIE) conference, which is scheduled to host approximately 17 workshops in Las Vegas on October 26 and 27. Hueni reported that on June 14, Sherie Earle ten Hoope (DOE) will send her the draft abstracts for the workshops. Kinser suggested that the Forum review the abstracts of the speakers at the conference and develop a half-day, or full-day, roundtable discussion. Hueni will forward the draft abstracts to the Forum members as soon as she receives them. Trish Erickson(NRMRL-Cincinnati) said that on June 17, she is scheduled to attend a teleconference to review the TIE abstracts with Felicia Barnett (Region 4), John Barich (Region 10), and Kelly Madalinski (TIO). Stamnes agreed to attend the June 17 teleconference and keep the Forum up-to-date on the abstract review.

## GROUND WATER FORUM

### *Future Direction of the Ground Water Forum*

Ground Water Forum Co-chair Curt Black (Region 10) stated that one of the goals of the meeting was to rejuvenate interest in Forum activities by focusing resources on issues important to the regions. Black asked for ideas from new and old forum members to encourage more participation and enthusiasm at future meetings and conference calls. He opened the business session by requesting the meeting participants to post answers to the eight questions written on flip charts. The following is a summary of the responses posted and subsequent discussions:

#### What are the professional and personal benefits of Forum participation?

- meeting colleagues and developing a network of technical contacts
- keeping up with current issues
- addressing or debating issues with other regions in person
- learning technical innovations and practical applications from invited technical experts
- increasing understanding of ground-water investigation and remediation directions on a national level
- sharing and learning from the states' experiences
- learning the EPA information pathway and the direction of EPA
- developing sound technical directives, issue papers, and guidance documents
- prestige and honor

#### How can the Forum increase the benefit of your participation?

- provide a letter of support and a list of state representatives to each state's management
- review the states' role in the GWF
- less emphasis on Forum "process"
- demonstrate characterization techniques at semi-annual meetings
- share information on interesting technical demonstrations in the regions
- continue providing state-of-the-art information
- help develop field methods (e.g., improved gradient monitoring in tidally influenced environments)

#### What actions could the Forum take to increase your level of participation?

- pay for travel costs or *per diem* of the participants
- continue financial support to the states
- further define the roles of the states in the GWF
- raise the profile of the GWF so management notices
- decrease regional workloads to free up time to devote to the GWF
- increase the "agency to agency" public relations effort
- focus on "themes" for conferences (field trip to Aberdeen Proving Grounds at the Baltimore meeting was very beneficial)
- emphasize regional consistency
- hold more open discussions and solicit all members' opinions

#### What does the Forum bring to your region or state?

- help with technical issues
- regional perspectives
- increased regional consistency
- sounding board for ongoing issues
- focused discussions on technical issues

- issue papers and guidance documents
- network of technical resources
- informal peer review

How can the Forum increase the benefit to your region or state?

- encourage more regional training from ORD
- hustle completion of issue papers and guidance
- increase access and voice of state participants
- send E-mail updates on TSP activities
- advocate that the technical support team continue on a project until its end

How can the Forum increase the benefit to Headquarters and our laboratory partners?

- continue to develop and assist with technical directives
- focus Headquarters' financial contributions toward practical implementation of necessary site characterization techniques
- help them identify the issues that are really relevant to the regions
- support the Regional Exchange Program in which regional technical staff work at the ORD laboratories

How can the Forum improve the value of the conference calls?

- at the end of each call, list the pluses and minuses of the call
- at the end of each call, propose an agenda for the next call
- distribute agendas early (at least 1 week prior to the call) to allow for input from other managers in the regions and states
- end calls promptly at the scheduled time
- keep the discussions focused on the agenda topics
- add more technical discussions/brainstorming/case studies
- put business information in E-mail messages, rather than devoting time for them on the calls
- discuss and provide updates on an action item during each call
- don't allow Headquarters to monopolize calls

Additional discussion:

The Forum agreed that monthly or quarterly updates or newsletters on the activities of the GWF would be beneficial. Kevin Willis (Region 2) suggested a process similar to TechDirect, TIO's monthly E-mail information service. The update would highlight Forum activities and contain brief updates of progress on issue papers or other action items. Brian Lewis (California Department of Toxic Substances) stressed the need to market the GWF so it becomes more visible and thus, accepted by management. He suggested a press release with the Forum's resources, accomplishments, and past history. It also could be sent to publications and would provide a forum for feedback from state regulators.

Another marketing avenue suggested was to have the forum mentioned at the regional PRB training sessions, e.g., saying "brought to you by the GWF" in addition to ORD and TIO.

***Update Forum Priorities***

During the Monday session, Curt Black polled the Forum for technical issues important to the regions and states to see if there are common issues and trends that can be used to develop research priorities. He pointed out that the priorities won't necessarily be addressed by issue papers from ORD. The following technical issues were proposed and discussed:

- *Where is the appropriate place to sample the ground-water column to find the highest concentrations of contaminants? —Brian Lewis (California Department of Toxic Substances)*

Lewis explained that his colleagues have debated the best spot in the water column to place a low-flow pump when sampling. He cited a study they did that yielded anomalous results—higher contaminant concentrations were found in samples collected with bailers (which typically collect water at the top of the water column) than with low-flow pumps. Lewis wanted more information on where to place well screens and sampling tools to obtain representative samples.

Forum discussion of this issue suggested it is part of an overarching issue: the application of microscale characterization data to larger scale risk exposure assessments. The use of DPT data was also considered as part of this issue as was establishing data quality objectives (DQOs).

- *How can we prohibit the use of vacuum trucks for purging monitoring wells? —Brian Lewis (California Department of Toxic Substances)*

Lewis indicated that the use of vacuum trucks to purge wells at UST sites was common in California. These trucks are also being used by the Navy. He wondered whether there were any regulations that prevent their use and suggested the need for regulatory or technical justification to assure that “recommended” approaches are followed.

The Forum decided that this issue could be addressed during a future GWF conference call and postponed further discussion until then.

- *How does one quantify volatilization of VOCs from ground water into the vadose zone and indoor air? —Helen Dawson (Region 8)*

Dawson explained that several projects she has worked on recently had chemicals that volatilized from the subsurface into indoor air space. Site characterization and risk evaluation has been a problem.

- *How is monitored natural attenuation (MNA) applied to chlorinated pesticides? —Kay Wischkaemper (Region 4)*

Wischkaemper would like to know appropriate indicators for the MNA of toxaphene and other chlorinated pesticides.

- *How does one evaluate the performance of DNAPL remedies? —Kay Wischkaemper (Region 4)*

Wischkaemper explained that this is probably an issue of characterization as well as performance evaluation. How does one assess the amount of DNAPL present at the site?

- *How does one determine whether ground-water protection standards are being met at heterogeneous sites (i.e., dilution factor)? —Tom Aalto (Region 8)*

The Forum concluded that this issue was similar to Brian Lewis’ earlier issue and grouped the two together.

- *In regards to the relation between technical impracticability (TI) and MNA, is a stable plume equivalent to the natural attenuation of the leading edge? Also, is natural attenuation or flushing to surface water equivalent to ACLs? —Kathy Davies (Region 3)*

Davies pointed out that if it is technically impracticable to control the source, guidance allows for natural attenuation or natural flushing. She noted a site in Region 3 where the PRP may purchase land downgradient of the plume to expand the area the plume may extend without going “offsite.” Dick Willey (Region 1) indicated that there has been a law case that addressed such purchases. Wischkaemper added that this issue is covered in the preamble to the National Contingency Plan (NCP).

- *How is MNA applied to explosives in ground water? —Jeff Johnson (Region 7)*

Johnson noted that this is being proposed at some facilities in Region 7. The Forum decided to combine this issue with the issue of MNA of chlorinated pesticides and other non-volatile compounds. Mavis Kent (Oregon DEQ) suggested that an overview for MNA be developed for different classes of compounds. Lewis mentioned that California is developing guidance that may incorporate this idea.

- *How is MNA that involves only diffusion and dispersion evaluated? —Doug Yeskis (Region 5)*

Davies added that this issue includes how to determine the natural attenuation rate.

During the Tuesday business sessions, the GWF ranked the issues. Each region submitted one vote. The three issues ranked as “highest priority” were:

- The effect of microscale vs. macroscale characterization on risk exposure assessment
- Is contaminated ground water discharging to surface water handled as MNA or by ACLs? When is this okay and when is it a problem?
- Quantifying volatilization of VOCs from ground water to the vadose zone and indoor air

Davies and Bernie Zavala volunteered to break the microscale/macroscale issue into more manageable components since it is a broad issue. René Fuentes (Region 10) and Jeff Johnson (Region 7) agreed to assist. The workgroup plans to complete this task by October 30.

Ken Lovelace agreed to tackle the second issue during the September conference call.

Helen Dawson will scope the issue of indoor air and try to assemble a workgroup to assess an approach.

### ***DPT Workgroup Update***

Bernie Zavala (Region 10) updated the GWF on the activities on the Direct Push Technology (DPT) Workgroup whose members include Bill Brandon (Region 1), Dean Maraldo (Region 2), Mark Filippini (Region 9), Judy Canova (SCDHEC), Rob Hitzig (OERR), Dan Thornton (OERR), and Randall Ross (SPRD-Ada), as well as several other regional and state representatives.

The goal of the workgroup is to develop guidance on DPT. The workgroup initially focused on obtaining acceptance for the use of DPT ground-water and soil data for Hazard Ranking System (HRS) scoring. They now are considering the use of DPT for site characterization as well. The workgroup’s contractor support, DynCorp, has written a draft issue paper, which has been reviewed but is not complete. The workgroup has approved an outline for DPT guidance, which the GWF will be able to review when complete.

Zavala mentioned that Ross is compiling a database that compares DPT samples with monitoring well samples. Curt Black suggested he include SCAPS data, which is readily available in Region 10. Davies

commented that she has a site with hundreds of monitoring wells and SCAPS sampling points; the few SCAPS hits that raised concern were isolated and not reproducible. She also asked whether the workgroup is considering cone penetrometer tests (CPT). Bill Brandon (Region 1) pointed out that vertical deviation of DPT holes can be significant causing uncertainty in data. He is skeptical of using DPT data for compliance monitoring.

Zavala noted that the Kansas Department of Health and Environment is comparing metals data collected from DPT and monitoring wells drilled using hollow stem augers. The draft comparison study is due at the end of June 1999. Zavala agreed to share it with the Forum when available and will continue to keep the forum informed of the workgroup's activities.

Canova mentioned that the workgroup is planning a survey of states to see how they use DPT and whether or not they have objections to its use. The survey will be funded by a non-profit organization.

### ***Ground-Water Sampling Guidelines Paper***

Bernie Zavala distributed a draft copy of the issue paper *Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers*. He requested that the GWF review the draft and submit comments to him by September 1. The draft currently lacks the SOPs, which will be attached. Zavala proposed to have the SOPs available for review by July 15. The workgroup will review forum members' comments and revise the guidelines paper.

Kathy Davies pointed out the benefit of conducting time-series sampling during pumping tests. At one site, concentrations of contaminants decreased dramatically when a switch was made to low-flow sampling. Time-series sampling detected the original higher concentrations revealing that the monitoring wells were no longer in the "right" location.

### ***Update on TSP and TIO Activities***

Rich Steimle and Kathy Yager of EPA's Technology Innovation Office (TIO) summarized TIO's activities and the involvement of state representatives in TSP activities:

Involvement of State Regulators in TSP. TIO has established a cooperative agreement with the National Ground Water Association (NGWA) to fund participation of state regulators in TSP. The NGWA will work directly with the states to decide which two meetings, in addition to the two semi-annual TSP meetings, they will attend. Although the NGWA may choose to fund other state regulators, only the core group of states chosen by the forum members will attend the TSP meetings. It is possible that the NGWA will recommend their own training courses for the states to attend, but they can request other courses.

Kathy Davies (Region 3) asked whether the GWF is free to discuss draft documents (labeled "Do not cite or quote.") with the state representatives to the Forum. Ken Lovelace (OERR) indicated that the Forums are free to discuss such documents with fellow regulators.

Mavis Kent (Oregon DEQ) suggested updating the bylaws with the role of state participants, including voting and involvement in workgroups. This would help make their role more official and would help them get approval from their management to participate. Co-chair Luanne Vanderpool (Region 5) agreed to update the bylaws. Black and Vanderpool agreed to discuss the issue of voting with the other forum co-chairs to ensure consistency—will the states receive one vote each? one collective vote? vote with their respective regional representatives? or continue as non-voting representatives?

The state participants also agreed that a press release—possibly including a mission statement and the Forum history—would help them drum up management support for their participation. Barbara Vetort-

Tiffany (Michigan DEQ) indicated that a press release should include a means for state regulators to get in touch with the GWF. Ron Lillich (Region 8) agreed that information sharing from the “bottom-up” is needed.

Remediation of DNAPLs in Bedrock. TIO also has signed a cooperative agreement with the Ministry of Environment in Ontario, Canada, to exchange information on the remediation of DNAPLs in fractured bedrock. The two groups will hold their first meeting next year in New England.

TIO is trying to identify sites at which remediation of DNAPLs in fractured bedrock is underway to determine what methods are being used and where. Interns at TIO have been compiling a database with this information. TechDirect (TIO’s E-mail information service) issued a call for sites on June 1 and thus far received information on 20-30 sites. Steimle invited Forum members to submit information on sites in their region. He said TIO would accept information on sites with dissolved contamination in bedrock as well. Curt Black expressed concern about submitting information on some sites in Region 10 since characterization of the sites is not complete. Kevin Willis (Region 2) suggested that Steimle consult the ROD database for further information on fractured bedrock sites. Ken Lovelace also cited a study done 3-4 years ago that compiled detailed information on sites in three regions. The report was submitted to NRMRL’s Subsurface Protection and Remediation Division (SPRD) in Ada, Oklahoma.

State Dry Cleaners. A workgroup of state regulators has had several conference calls and recently held their first meeting to study issues on cleaning up dry cleaning sites. The workgroup has broken up into three subgroups: 1) Outreach; 2) Project Management/Technical Issues; and 3) Program Development/Administration.

Pump-and-Treat Optimization. This project has two components: simple optimization (hydraulic models) and complex optimization (contaminant transport models). One of the most useful outcomes of the project is a spreadsheet screening approach for comparing the costs of alternative pump-and-treat designs. The purpose of the screening is to quickly determine if significant cost savings might be achieved by modifying an existing or planned pump-and-treat system, and to prioritize subsequent design efforts. Hydraulic optimization using the MODMAN model can be done for improving designs. Regional workshops are planned for training in the use of the spreadsheet and hydraulic optimization. The first will be held in Region 5 in August 1999.

TIO is planning two projects to study the benefits of optimization. The first will be conducted at the Massachusetts Military Reservation. Four pump-and-treat systems will be designed by a contractor: one using hydraulic optimization, one using trial and error, and two using contaminant transport optimization. The results of the four systems will be compared. The second project will examine existing pump-and-treat systems. Contamination transport optimization will be applied to these systems to see if they can be improved. The three sites have not yet been selected.

NOTE: Rob Greenwald of HSI GeoTrans made a presentation on this topic during the Wednesday session of the conference on *Subsurface Remediation: Improving Long-Term Monitoring & Remedial Systems Performance*.

Air Sparging Training. TIO is sponsoring training on how to install air sparging systems. The course has been developed and one of the four trial runs has been held. Yager suggested that the GWF be represented at the upcoming trial in Washington, DC. Bill Brandon (Region 1) and Kathy Davies volunteered to attend. Once regional training is available, the regions will be asked to pay for the travel of ORD presenters. There will be no registration fee. Yager offered a copy of slides from the training if any forum member is interested.

*Natural Attenuation Case Study*

Bill Brandon presented data from two similar fuel sites at Ft. Devens, Massachusetts, that showed how trend analyses can lead to misleading interpretations of the effectiveness or rate of natural attenuation. He acknowledged the contribution of Dave McTigue of Gannett-Fleming to preparing his presentation.

MNA was selected in the Records of Decision (RODs) for both sites because the Maximum Contaminant Level (MCL) boundaries of the BTEX plumes appeared to be stable over several years of monitoring. The MCL boundaries did not extend significantly beyond the source area at either site. Concentrations in one of the plumes varied seasonally—higher in the summer and lower in the winter.

Both sites initially appeared to be good candidates for MNA; trends in all of the source area monitoring wells showed overall declining BTEX concentrations. However, in the two years of monitoring after MNA was selected, both rising trends and very steep declining trends were observed. As a result, the appropriateness of MNA has been put into question. Under further scrutiny, the rising trends have been interpreted to be the result of a contaminant “pulse” released following a May 1996 removal action. (The source area was left uncovered for several months.) The short-term trends were not considered to be persistent or representative of long-term trends. Statistical analyses, such as the Mann-Kendall method, were recommended to further analyze the plume trends; however, Mann-Kendall can be valid for both rising and declining trends.

In conclusion, Brandon recommended using caution in situations where multiple trends and processes are superimposed. Contaminant pulses arising from source area remedial actions and other short-term trends (e.g., seasonal trends) may be mistaken for longer-term trends. Thus, identification of trends based on short-term data should not be accepted without question. Furthermore, statistical analyses of plume trends can lead to equivocal or confusing results. Appropriate application of statistical methods first requires sufficient data to both identify and then sort out shorter-term trends, which may be overprinting the longer-term trend that is sought to verify that MNA is, or is not, achieving contaminant degradation at the expected rate.

### ***Progress Toward Ground-Water Cleanup***

Ken Lovelace (OSWER) discussed the progress of cleaning up ground-water plumes in the United States. He presented data on the number of NPL deletions and construction completions, and the progress of restoration remedies. The data compilation was completed in April 1999, so it is fairly current. However, Lovelace would like to update the data with state-lead sites. He cautioned that the data are “soft,” because some regions’ approaches to assessing the data varied. Lovelace plans to add some qualifiers to the data before distributing it, so the following is just a general summary of the data.

NPL deletions. Less than 10% of the 184 sites that have been deleted from the NPL included a remedy for ground water. Most of the sites remedies used pump-and-treat systems. Lovelace noted that the goal of the ground-water remedy may have been to clean up the plume to MCLs or to simply contain it. Even though a site has been deleted from the NPL, ground-water monitoring may still be required.

Construction completions. Sites with “construction completions” at which physical construction of remedies is finished. (The success of the remedies is not considered.) Approximately 44% of the nearly 600 sites with construction completions include a remedy for ground water. Most of these construction completions were pump-and-treat systems, and less than 10% involved MNA. Only two sites used *in situ* treatment technologies without the use of pump-and-treat or MNA.

Restoration remedies. An estimated 719 RODs at 616 sites have the goal of restoring ground water to beneficial use. The remedies of about 461 of the RODs were implemented by FY97. Eighty-three of these used MNA or source control alone; the rest used “active” remedies.

Restoration progress. There has been significant progress toward restoration goals achieved at about 31% of the sites where restoration remedies have been implemented by FY97. “Significant progress” includes those sites expected to restore a large extent or all of the plume by the year 2000. Remedies at an additional 25% of the sites have prevented contamination of water supplies.

### ***Tidal Data Reduction***

Curt Black raised the issue of difficulties in monitoring the effectiveness of corrective action systems near tidally influenced water bodies. He noted how the hydraulic head changes in a complex fashion at several of his sites in Region 10, yet facilities are compelled to demonstrate hydraulic control of the plume to satisfy their RCRA permit. What is needed in this situation is a means to determine the “effective hydraulic head” within a well penetrating an aquifer where the heads are varying periodically with the tides.

The problem with the effects on at least the coastal northwestern U.S., with tides in excess of 16 feet, is that the subtle effects we need to see (e.g., the 0.01 foot resolution of vertical gradients) is completely lost in the noise of constantly changing water levels. Corrections are not possible on the basis of distance from the water body or depth due to heterogeneity and anisotropy of the aquifer materials (especially surficial fill).

A previous approach to tidal data reduction was proposed by Michael E. Serfes in a 1991 issue of *Ground Water*. This approach involved taking a running average over 20 some or 71 consecutive hourly measurements. This approach suffers from the deficiency of no barometric conversion and no provision for establishing error bars.

Black cited a more recent paper by Evelyn Roeloffs, a PhD. geophysicist at the USGS Cascades Volcano Observatory in Vancouver Washington. Roeloffs is working to predict earthquakes by looking at changes in ground-water levels that result from the deformation of aquifers under geologic stress. Her approach requires the removal of approximately 12 to 15 periodic components of earth tides and a correction for barometric pressure. She originally developed the approach to predict earthquakes by subtracting earth-tide-induced water level changes caused by the compression and dilation of aquifers. The benefits of her approach include the quantification of error for residual tidal signatures, a much more mathematically rigorous approach to tidal component removal. Additionally, she detrends the data to remove long-term drift (a component which may serve us in correcting for seasonal or recharge driven trends (the time-period of the correction is user selectable).

Drawbacks to the use of this approach include the necessity for a time series of at least 1 month (and ideally up to 3 months) and the need for accurate barometric data (preferably, locally measured). In response to a question from Helge Gabert (Utah Division of Solid and Hazardous Waste), Black indicated that uniform time periods are not required for the measurements because the program features several utilities including one which will produce a uniform time base (for all the data transducers and the barometric pressure time series). Other utilities interpolate and fill gaps in the data series.

With additional work, this technique appears well suited to providing defensible answers to our questions on the effectiveness of corrective action systems operating within tidally influenced aquifers. What is required is a willingness to instrument a number of wells with transducers and data loggers and to locally record barometric pressure over a time frame of 4 to 12 weeks.

Black is moving the software from a series of “user hostile” separate Fortran utilities (approximately 25) to an integrated package within an executable windows GUI application. The time frame for completion of this project depends Black’s workload. It was not listed as a priority of the Forum at large and is being completed as a labor of love (and to meet the needs of several sites in Region 10).

### ***Ground Water Forum Electronic Bulletin Board***

Rich Freitas (Region 9) demonstrated access to the electronic bulletin board recently developed by Ann Lam (Region 9) for the GWF. The bulletin board can be accessed on the Internet by typing [http://r9hub1.r09.epa.gov/r9data/Superdis.nsf/\(\\$All\)?OpenView](http://r9hub1.r09.epa.gov/r9data/Superdis.nsf/($All)?OpenView) in your web browser. Once at this web address, you must enter your name and password. Contact Lam at [lam.ann@epa.gov](mailto:lam.ann@epa.gov) if you do not have a password or if access is denied.

Freitas and Herb Levine (Region 9) have uploaded a few GWF documents, including the Forum's bylaws and the action items from the TSP meeting in San Antonio. Most documents can be downloaded as HTML (.htm) or WordPerfect (.wpd) documents.

The GWF maintains two websites—one through EPA's homepage at (<http://www.epa.gov/tio/tsp>) and one through Region 10. However, both are available to the public, and neither are interactive like the bulletin board. Freitas suggested posting more of the Forum documents, such as meeting minutes and case studies, to avoid sending so many E-mail messages.

### ***Ground Water/Surface Water Interactions Workshop***

Dick Willey (Region 1) updated the Forum on the *Ground Water/Surface Water Interactions Workshop* held in January 1999. Seventy people from regulatory, academic, and consulting backgrounds attended. About half had backgrounds in hydrogeology, and half had backgrounds in ecology or chemistry.

The purpose of the meeting was to foster communication between hydrogeologists and ecologists on the topic of the discharge of ground-water plumes to surface water bodies and the corresponding effect on the surface water ecosystems. The issue is important in all of the regions. In a 1990 study of sanitary landfills, 76% were found to be within ¼-mile of wetland or deepwater habitats. In a 1993 assessment of 52 CERCLA sites nationwide, 60% posed a threat to surface water ecosystems. Willey also cited unpublished GIS data that indicates that 75% of all RCRA and CERCLA sites are located within ½-mile of a surface water body.

Workshop participants worked toward developing a consensus on what is needed to enhance the current understanding of ground water/surface water interactions. This included advocating guidance and SOPs, further research, and the rapid transfer of research technology into the environmental management and regulatory routine use.

Willey, René Fuentes, and Bruce Duncan (Region 10) currently are preparing a workshop summary document that will include:

- extended abstracts of oral presentations and poster presentations
- discussion group summaries
- case study matrix containing sites in a variety of hydrologic regimes
- bibliography
- suggested research and other actions

Willey expects the summary to be completed in the Fall of 1999, along with memoranda requesting research, guidance and SOPs, and additional workshops and training. He expects the GWF and Ecological Risk Forum will have the opportunity to review the documents. Additional products of the meeting are likely to include one or more issue papers or overview documents, an article in a national journal, and additional national meetings. Fuentes announced that he is still accepting case study submissions. Contact Diane Dopkin (EMS, Inc.) at (301)589-5318 or [ddopkin@emsus.com](mailto:ddopkin@emsus.com) to obtain a one-page case study form to complete. (The form will take about 15 minutes to complete.)

**Fall 1999 and Spring 2000 TSP Meetings**

The Engineering Forum plans to hold the Fall TSP meeting in conjunction with DOE's Eleventh Technology Information Exchange (TIE) Workshop in Las Vegas. The workshop is scheduled for October 26-27, 1999, which falls on a Tuesday and Wednesday. If Sunday October 24, and Friday, October 29, are travel days, there are two full days available for GWF sessions on Monday and Thursday. The GWF members attending the St. Louis meeting voted to take a field trip to the Yucca Mountain nuclear waste repository on Monday.

The GWF is responsible for planning and organizing the TSP meeting in the Spring of 2000. The Forum is pursuing the idea of holding the meeting in conjunction with the *International Conference on Remediation of Chlorinated and Recalcitrant Compounds* in Monterrey, California. The conference is scheduled to be held May 22-25, 2000.

**Review of Action Items from November TSP Meeting in San Antonio**

During Monday's session, Luanne Vanderpool reviewed the status of GWF action items proposed during the November TSP Meeting in San Antonio. During Tuesday's session, the GWF discussed how they were going to follow up on each action.

<b>Action Items from San Antonio (November 1998)</b>	<b>Status and Follow Up</b>
(1) <i>Annual ORD research priorities.</i>	The GWF completed its recommendations for FY01, but has to make recommendations for FY02.
(2) <i>Ground-Water Sampling Guidelines Paper.</i>	Ongoing. <u>The GWF will work on the priorities for FY02 during future conference calls and on the electronic bulletin board. From now on, the priorities will be developed at the Spring TSP meetings</u>
(3) <i>Electronic information bulletin board.</i>	<u>Bernie Zavala and Doug Yeskis will complete the SOPs by July 15. The GWF will review the draft paper and submit comments to Zavala or Yeskis by September 1, 1999. The workgroup will revise the paper by November 1.</u>
(4) <i>Action items list.</i>	The bulletin board is operating, and GWF members can access it. However, members are not using it.
(5) <i>Natural Recovery of Contaminated Sediments Guidance.</i>	<u>The GWF will start using the bulletin board for communications including posting agendas, minutes, action items, and workgroup members.</u>
(6) <i>Ground Water/Surface Water Workshop.</i>	Luanne Vanderpool has been updating and distributing the action item list on a quarterly basis.
(7) <i>Natural Recovery of Contaminated Sediments Guidance.</i>	Ongoing. Co-chairs will distribute an updated action item list by August 1.
(8) <i>Natural Recovery of Contaminated Sediments Guidance.</i>	Ned Black attended the "Remediation of Contaminated Sediments" meeting in December. He updated the forum on the status of the <i>Natural Attenuation of Sediments Guidance Document</i> during the January conference call.
(9) <i>Ground Water/Surface Water Workshop.</i>	Done. (Although the workgroup is still working on the document.) <u>Dave Drake will keep the GWF informed of progress and future activities.</u>
(10) <i>Ground Water/Surface Water Workshop.</i>	The workshop was held on January 26-28, 1999.
(11) <i>Ground Water/Surface Water Workshop.</i>	<u>The draft summary report will be completed by December 1, 1999. The workshop documents will be posted on CLU-IN.</u>

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- (7) *Uncertainties in Time Frames Issue Paper.* Ruth Izraeli submitted a proposal to SPRD-Ada. Workgroup members commented that statistics appeared to be over-emphasized in SPRD's draft outline.
- Vanderpool agreed to contact Izraeli for the status of the outline. Kay Wischkaemper, Kathy Davies, Helen Dawson, Vince Malott, Dave Wilson, Luanne Vanderpool, and Kevin Willis volunteered to join the workgroup to comment on the outline.
- (8) *Monitoring of Field Parameters Issue Paper.* The workgroup of Bernie Zavala, Mark Filippini, and Doug Yeskis have reviewed SPRD-Ada's outline, and SPRD-Ada is drafting a new outline.
- Zavala said that the draft outline will be distributed to the GWF at the end of June 1999.
- (9) *Data Usability Issue Paper.* Ernie Waterman submitted a proposal for the issue paper to the National Exposure Research Laboratory (NERL) in Las Vegas.
- A workgroup must be formed to review the any outline and the draft paper when available. Rich Freitas volunteered.
- (10) *Site Characterization for MNA of Chlorinated Solvents Issue Paper.* Steve Acree has completed the first draft of the issue paper.
- The draft is a bit "wordy" and must be streamlined.
- (11) *Extraction/injection wells paper.* Steve White submitted a revised draft paper to Kathy Davies. She coordinated and submitted comments on the paper, but has not heard back from White.
- Davies will contact White for its status and report back to the GWF via the electronic bulletin board.
- (12) *Spring TSP meeting.* The GWF planned the meeting in conjunction with the "optimization" conference in St. Louis.
- Done.
- (13) *San Antonio meeting speaker thank-you letters.* The GWF co-chairs sent the thank-you letters to people who spoke at the Fall TSP meeting in San Antonio.
- Done.
- (14) *TIO's Direct Push Technology Workgroup* Bernie Zavala will report back to the GWF on the workgroup activities.
- (15) *Guidance on Long-Term Monitoring for MNA* Herb Levine, Roseanne Sakamoto, and Steve Mangion are writing this guidance document with support of co-authors from NERL-Las Vegas and SPRD-Ada. The document will undergo peer review and is expected to be completed by the end of the calendar year. The GWF will review the draft in the Fall of 1999.
- (16) *Pump-and-Treat Optimization.* Kay Wischkaemper participated in the stakeholder panel made up of representatives from EPA, DoD, DOE, USGS, academia, and consulting. The panel submitted comments on the draft final report *Hydraulic Optimization Demonstration for Groundwater Pump-and-Treat Systems*.
- Done. The results will be presented during the optimization conference later this week.
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(17) December 1999 RTDF Meeting	Steve Mangion attended the December meeting in DC.  <u>Kathy Davies volunteered to continue the GWF's participation. However, this year's conference was canceled.</u>
(18) State Participation in TSP Workgroup	State representatives from each region were contacted to participate in the TSP. Two new members of the "core group" attended the St. Louis meeting.  Done. The co-chairs will propose bylaw revisions reflecting state participation and will discuss issue of states voting with the co-chairs of the Engineering and Federal Facilities Forums.
(19) Permeable Reactive Barriers Training	The two dry runs of the training are complete, and several GWF members have submitted comments. Done.

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Additional action items from GWF conference calls and the St. Louis meeting.

- January: GWF members were to contact Dick Willey with the status of their regional or state databases of chemical and/or geological information.  
  
Status: The GWF decided there was not enough interest in this advocating compatible regional databases. Will not pursue.
- May: The Remediation Technologies Development Forum (RTDF) would like the GWF to review its new course—Enhanced Bioremediation of Chlorinated Solvents—which should be in about six weeks.  
  
Status: The RTDF canceled this request because a review would take too long.
- May: Jim Weaver (NERL-Athens) requested assistance from the GWF in testing the Internet version of its "Modeling Subsurface Transport of Petroleum Hydrocarbons" training course. (A preview of the course can be viewed on at [www.epa.gov/athens/software/training/WebCourse\\_](http://www.epa.gov/athens/software/training/WebCourse_))  
  
Status: Helen Dawson and Dave Wilson volunteered to test the training course.
- St. Louis: The GWF co-chairs will restructure monthly conference calls in order to increase discussions. Bill Brandon volunteered to identify a technical issue for discussion during each call. The first topic scheduled for discussion will be Brian Lewis' well purging issues (the use of vacuum trucks and where to place pumps) during the August conference call.
- St. Louis: The regional representatives at the St. Louis meeting will contact other GWF members in their regions to confirm their interest in continuing participation.
- St. Louis: Ken Lovelace will distribute a detailed write-up of his presentation on the status of ground-water cleanup.
- St. Louis: Curt Black will discuss the possibility of travel support with Rich Steimle.
- St. Louis: Kevin Willis will work with Diane Dopkin to update the TSP brochure and pursue other avenues to market the GWF.

- St. Louis: Dave Wilson, René Fuentes, Kay Wischkaemper, and Kathy Davies agreed to form a workgroup to examine the shift in focus of Agency programs toward O&M.

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